

REMARKS

Office Action

In the Office Action mailed June 4, 2007, the Examiner rejected claims 1, 3-10, 12-15, and 17-20 under 35 U.S.C. 103(a). Claims 1, 5-10, 12-15, and 17-20 were rejected as being unpatentable over Toda et al., U.S. Publ. No. 2002/0037100 (hereinafter "Toda") in view of BABA et al., U.S. Publ. No. 2001/0014172 (hereinafter "BABA"). Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Toda and BABA in view of Gleicher et al., U.S. Patent No. 5,218,431 (hereinafter "Gleicher"). Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Toda and Hill in view of Bryniarski et al., U.S. Patent No. 5,974,182 (hereinafter "Bryniarski").

Applicant requests reconsideration of the grounds of rejection as they ignore one or more limitations of the claims that are neither taught nor suggested by any reference of record or any combination of references. Remarks explaining the absence of these limitations are set forth more fully below. Therefore, the grounds of rejection should be withdrawn and the claims allowed.

Section 103 Rejection

Applicant's invention is directed to a system and method for evaluating whether a file should be compressed and the compressed file stored in the secondary storage while the file that was evaluated is stored in slower tertiary storage. The Examiner has failed to find a teaching or suggestion to provide such a system or method. The system of Toda discloses a system that operates on an image file composed of multiple document sections. Each section may be operated on separately to obtain improved efficiency for the various data types used to construct the image file. No discussion is given regarding the storage of the final compressed image file and no discussion regarding the preservation of the original image file is provided either. Certainly, the Toda reference is devoid of a teaching or suggestion that the original image file is preserved in a type of

storage that is slower than the memory in which the image file was originally stored before being compressed. The secondary reference BABA is equally silent on this point. Therefore, the foundational combination on which the Examiner relies for the section 103(a) ground of rejection is insufficient to support the Examiner's position. Accordingly, Applicant respectfully requests allowance of all pending claims.

Claim 1

Claim 1 requires that a file stored in secondary storage be evaluated for a downgrading operation, that a downgraded version of the file be stored in the secondary storage, and that the file from which the downgraded file was generated be stored in tertiary storage, which has an access time that is greater than the secondary storage. These limitations are neither taught nor suggested by the references of record, either alone or in combination.

In more detail, the Toda reference relied on by the Examiner is directed to a system and method for compressing image files that contain text and image data. The image processing apparatus described in paragraph 135 includes RAM, ROM, an external storage device, a storage medium, image data input from an image data input device, and a work area. The Examiner states that this paragraph (lines 5-10) teaches identification of an image file in secondary storage for a host system. *Office Action*, page 3, paragraph 7, lines 7-8. This statement, however, is incorrect as it states only that the RAM has an area for temporarily storing programs and data loaded from an external storage device and a storage medium. Nevertheless, Toda does teach the downloading of a color document from an external storage device, image input device or storage medium to RAM. *Toda*, paragraph 141. This teaching means that one of these three storage areas acts a secondary storage device to the system of Toda. The remaining description of this embodiment in Toda details the processing performed on the downloaded document. No teaching is provided regarding the storage of the compressed document after compression. Certainly, no disclosure is directed to the original downloaded image being stored in memory that is slower than the memory from which the original color document was downloaded.

This distinction is fatal to the ground of rejection. Without the storing of the downgraded document in the secondary storage from which the original file was taken *and* the storing of the original file in tertiary storage that is slower than the secondary storage, no *prima facie* case of obviousness can be made. As already noted, Toda does not teach or suggest the storage of the downgraded document in the secondary storage from which the original file was taken and it also does not teach or suggest the storage of the original file in storage slower than the secondary storage. BABA adds nothing to the disclosure of Toda. In the paragraph cited by the Examiner, BABA teaches only that an internal memory device be used to process data from a slower storage device to obtain speedier results. *See BABA*, paragraph 102-103. That is the same teaching of Toda, which downloads the original color document to RAM from one of the three external sources noted above. The Examiner has failed to indicate how BABA adds a third storage type to the combination. Moreover, no argument has been made that BABA supplies the storing of the downgraded file in the secondary storage in which the original file was stored and no argument *can* be made that BABA discloses the storing of the original file in a third type of memory because it only describes two types of memory. Consequently, the combination relied upon in support of the obviousness ground of rejection for claim 1 is deficient and the rejection should be withdrawn.

Claim 5

Claim 5 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 5 requires that the downgrading of the identified image file include reduction of the identified image file resolution to generate the downgraded file that is stored in secondary storage. Paragraph 6 of the Toda reference cited by the Examiner does not teach that the resolution of the entire image file is reduced or that the reduced resolution file is stored in secondary storage, from which the original image document was retrieved. The paragraph cited by the Examiner is silent as to the storage of the compressed non-text portion of the file that is extracted and reduced in resolution. Furthermore, the image file from which the non-text data are extracted is not described as being stored in tertiary storage nor does the resolution reduction of the image file occur in

response to a comparison of file metadata being compared to a downgrade threshold. For at least these reasons, claim 5 is patentable over all the references of record, alone or in combination.

Claim 6

Claim 6 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 6 requires that the downgrading of the identified image file include reduction of the identified image file pixel size to generate the downgraded file that is stored in secondary storage. Paragraph 63 of the Toda reference cited by the Examiner does not teach that the file with reduced bit size pixels be stored in secondary storage, from which the original image document was retrieved. The paragraph cited by the Examiner is silent as to the storage of the file having reduced black pixels (whatever that means). Furthermore, the image file not having reduced black pixels is not described as being stored in tertiary storage. Paragraph 63 of the Toda reference cited by the Examiner teaches that black pixels of a character text area in a binary image undergo thin-line conversion. The Toda reference does not state that black pixel reduction in thin-line conversion requires a reduction in the bit size of image pixels. The burden of proof is on the Examiner and it has not been met. For at least these reasons claim 6 is patentable over all the references of record, alone or in combination.

Claim 7

Claim 7 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 7 requires that the downgrading of the identified image file include conversion of a color image in the identified image file from one color format to another requiring less data for the image to generate the downgraded file that is stored in secondary storage. Paragraph 150 of the Toda reference cited by the Examiner does not teach generating a downgraded file by converting color data from one format to another requiring less data for representation and storing the downgraded file in secondary storage, from which the original image document was retrieved. The paragraph cited by the Examiner is silent as to the storage of the discriminated and reduced file. Paragraph

150 of the Toda reference cited by the Examiner does not teach that format conversion of a color image alone may be used for file size reduction. Rather, paragraph 150 discloses the conversion of color image data from one color space to another for the purpose of color discrimination. The Toda reference teaches that the converted color data are rounded following the discrimination made possible by the color format conversion. Thus, the Toda reference teaches a color format conversion that enables discrimination, but it does not teach a color format conversion that reduces data in the file. For at least these reasons, claim 7 is patentable over all the references of record, alone or in combination.

Claim 8

Claim 8 depends from claim 7 and is patentable for the reasons discussed with respect to claims 1 and 7. Additionally, claim 8 requires that the downgrading of the identified image file include conversion of a color image to a color palette version to generate the downgraded file that is stored in secondary storage. Paragraph 7 of the Toda reference cited by the Examiner does not teach that a color palette converted image file is stored in secondary storage, from which the original image document was retrieved. The paragraph cited by the Examiner is silent as to the storage of the file processed with the use of color palettes. Paragraph 7 of the Toda reference cited by the Examiner does not teach conversion of a color image to a color palette version. Instead, Toda teaches that a plurality of color palettes is generated from the original image (paragraph 101) for the purpose of determining how to process a text area (paragraph 117) or how to compress a text area (paragraph 151). Therefore, the Toda reference does not support the asserted ground of rejection. For at least these reasons, claim 8 is patentable over all the references of record, alone or in combination.

Claim 9

Claim 9 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 9 requires that the downgrading of the identified image file include a combination of multiple downgrade operations to generate the downgraded file

that is stored in secondary storage. Paragraph 135 of the Toda reference cited by the Examiner does not teach that an image file reduced in size by a plurality of downgrade operations is stored in secondary storage, from which the original image document was retrieved. The paragraph cited by the Examiner is silent as to the storage of the files processed by the system described in the paragraph. Paragraph 135 of the Toda reference cited by the Examiner discloses an overview of the architecture for one embodiment of the Toda system. While Toda does describe various compression methods on different types of data, it does not disclose a plurality of downgrade operations being performed on an image file and the storage of the original file in tertiary storage while the file downgraded by the plurality of downgrade operations is stored in the secondary storage in which the original file was stored. For at least these reasons, claim 9 is patentable over all the references of record, alone or in combination.

Claim 10

Claim 10 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 10 requires that the downgrading of the identified image file include retrieval of a full resolution image from tertiary storage and the performance of a downgrade operation on the retrieved file to generate the downgraded file that is stored in secondary storage. Paragraphs 49 and 53 of the Toda reference cited by the Examiner do not teach retrieval of a full resolution image file from tertiary storage that is slower than secondary storage, performance of a downgrade operation on the full resolution image file to generate a downgraded file, and the storage of the downgraded file in secondary storage. In fact, FIG. 1 cited by the Examiner illustrates the impossibility of such a teaching. The original image shown in FIG. 1 moves from left to right for processing and results in two sets of compressed codes. These two sets of compressed codes are decoded by the system in FIG. 2 to reproduce the original image. Even if one interprets the original image of FIG. 1 as being stored in tertiary storage, neither the figures nor their descriptions disclose a file being identified in secondary storage with the identified file being downgraded in response to a comparison of metadata for the file with a downgrade threshold. The Toda reference does not disclose an identified image file in secondary

storage, a full resolution image file in tertiary storage, and a downgraded image file being stored in secondary storage after a downgrade operation is performed on the full resolution image file, with the tertiary storage being slower than the secondary storage. Consequently, Toda does not teach or suggest the limitations of claim 10. For at least these reasons, claim 10 is patentable over all the references of record, alone or in combination.

Claim 12

Claim 12 depends from claim 1 and is patentable for the reasons discussed regarding claim 1. Moreover, claim 12 requires that the comparison of the file metadata to the downgrade threshold include the comparison of the file metadata to a file frequency threshold. The Examiner has asserted that Toda describes such a comparison in paragraphs 64 and 94. Assuming for purposes of argument that the generation of a histogram for comparison of density ranges to a maximum occurrence of frequency values for the ranges to determine a representative value for image compression (paragraphs 64-68 of Toda) is a comparison of file metadata to a downgrade threshold (although Applicant maintains it is not so), the limitation of the threshold being a file access frequency threshold is missing from Toda. Therefore, Toda does not properly support the section 103 ground of rejection.

This type of reasoning also applies to the computation of high frequency coefficients from orthogonal transformations of pixel data. The actual pixel values are not file metadata and the orthogonal transformations derive from the pixel values do not relate to the number of times that a file has been accessed for a particular time period. Paragraph 94 of Toda states that the reduction parameter controller of Toda partitions the image data extracted from a file into 8 x 8 pixel blocks for the computation of orthogonal transforms. The coefficients of these transforms are compared to an unidentified threshold to determine a reduction parameter. This comparison in Toda is not a comparison involving a file access frequency threshold. Consequently, the Examiner has failed to explain how these orthogonal transforms explicitly relate to a file access

frequency threshold. Without a rational relationship, there is no viable basis for concluding the orthogonal transform data of Toda is a file access frequency threshold. Therefore, claim 12 is patentable over all references of record, alone or in combination.

Claim 13

Claim 13 depends from claim 1 and is patentable for at least the reasons discussed above with respect to that claim. Additionally, claim 13 requires that the comparison of the file metadata to the downgrade threshold include a comparison of the file metadata to a last access time threshold. The Examiner has asserted that Toda describes such a comparison in paragraphs 64 and 94. As noted above with reference to claim 12, the operations of these paragraphs do not involve a file access frequency threshold. For similar reasons, they also do not involve a last access time threshold. Additionally, the Examiner has failed to show that the references, alone or in combination, teach or suggest that a downgrade operation on an identified file stored in secondary storage be performed in response to a comparison of file metadata to a last access time threshold, that the downgraded file be stored in the secondary storage, and that the identified file be stored in tertiary storage. Therefore, claim 13 is patentable over all references of record, alone or in combination.

Claim 14

Claim 14 depends from claim 1 and is patentable for the reasons discussed above with respect to that claim. Additionally, claim 14 requires that the comparison of the file metadata to the downgrade threshold include a comparison of the file metadata to a classification threshold. The Examiner has stated that this type of comparison is explicitly disclosed in the Toda reference at paragraphs 87 and 89. As explained in the Office Action, the Examiner is referring to the teaching in Toda that individual pixels be compared to a threshold to classify a pixel as being either white or black.

Applicant disagrees with the Examiner's assertions for a number of reasons. For one, a pixel is *file* data, not file *metadata*. Metadata is data about data. *See e.g.*

www.webopedia.com using “metadata” as a search term. That is how the Examiner interpreted the term “metadata” with reference to the histogram of paragraph 64 in the rejections discussed above. The Examiner clearly recognized that a histogram is not part of a file, but is data derived or about the file. The inconsistent use of metadata by the Examiner does not comport with the use of that term in the art, as indicated by the website referenced above, and by Applicant’s specification, *passim*.

Additionally, the Examiner has failed to show that the references, alone or in combination, teach or suggest that a downgrade operation on an identified file stored in secondary storage be performed in response to a comparison of file metadata to a classification threshold, that the downgraded file be stored in the secondary storage, and that the identified file be stored in tertiary storage. For at least these reasons, claim 14 is patentable over all the references of record, alone or in combination.

Claim 15

Claim 15 is an independent claim that is directed to a system for managing image files in a host system. The system includes a file data volume, a file selector, a file reducer, and a file controller. Examiner has asserted that all of these elements are disclosed in the Toda reference. For reasons set forth below, Applicant submits that the Examiner’s reading of the Toda reference is flawed and that a number of limitations of claim 15 are missing from Toda.

Claim 15 requires a file selector that retrieves file metadata from a data volume and compares the retrieved file metadata to at least one downgrade threshold to identify an image file stored in secondary storage for downgrading. In the Office Action, the Examiner refers to paragraph 56, which states that text area in a document is detected and text coordinate data are generated and stored in RAM. Thus, at the outset of the rejection, the Examiner has failed to find the first element, namely, a data volume that stores file metadata corresponding to files stored in secondary storage. Instead, the Examiner relies on an expansive reading of file processing in an effort to produce the first element in the

claim. Generating metadata on the fly for a single file downloaded from secondary storage is not a file data volume in which file metadata are stored. In the context of Toda, some data repository would have to store the text coordinate data for a plurality of files for the existence of a file data volume that stores file metadata corresponding to files stored in secondary storage. None of the components described with reference to FIG. 28, for example, include this type of data. Accordingly, Toda does not have a data volume in which file metadata are stored, and the reference certainly fails to teach a file selector that retrieves file metadata from such a volume and compares the retrieved metadata to at least one downgrade threshold.

Interestingly, the Examiner never uses Toda to provide a straightforward example of any portion of the claimed invention. For example, having selected paragraph 56 for the file volume, the file selector discussion in the Office Action relies on paragraph 87, which describes coupling areas having similar patterns and a color computation process. This paragraph, however, does not describe the text area detector retrieving the text coordinate data from a data volume to perform the area coupling. This pattern of picking and choosing disparate features of Toda appears to be the use of Applicant's specification as a map for selecting portions of the Toda reference and kluging them together to form a foundation for the 103 ground of rejection. Such use is impermissible hindsight. Toda does not disclose a file management system that selectively downgrades files to replace files maintained in secondary storage while keeping the file from which the downgraded file was generated in tertiary storage. Efforts to construct such a system from the pieces in the reference using Applicant's specification have been fruitless. Allowance of the pending claims is respectfully requested.

The cited use of paragraph 94 is likewise fruitless because it states that the reduction parameter controller computes orthogonal transforms and compares the number of areas having a high frequency coefficient to a threshold. It does not disclose a component retrieving file metadata from the text area detector, identified by the Examiner has the data volume containing the file metadata, nor does it describe the controller as comparing

metadata retrieved from a data volume to a downgrade threshold to identify an image file stored in secondary storage for downgrading. The system of Toda processes one image at a time and does not select files for compression. How Toda determines which image document to load into its RAM is undisclosed. Consequently, the original image was not selected for compression by the system and certainly it was not selected for compression by the reduction parameter controller. The comparison performed by the reduction parameter controller results in the selection of a reduction parameter – not an image file stored in secondary storage. Furthermore, the selected reduction parameter is not downgraded. Thus, the Toda reference fails to support the Examiner's position that Toda discloses a file selector that retrieves file metadata from a data volume and compares it to a downgrade threshold to identify an image file for downgrading.

The Examiner asserts that Toda teaches a file controller that generates file metadata for storage in the file data volume and that stores a downgraded file in secondary storage and the identified image file in tertiary storage. This reading is also flawed for a number of reasons. For one, the Examiner relies on paragraph 87 for the teaching of the file controller that generates file metadata. Yet, the Examiner has already used this paragraph to identify the text area detector as the data volume. The Examiner, however, does not show how the text area detector both generates file metadata and stores it in a data volume. Additionally, claim 15 requires the file controller to store the downgraded file in secondary storage and to store the identified image file in tertiary storage. Toda cannot perform the function of storing an identified image file because it never identified an image file in secondary storage for downgrading. The Examiner states that Toda stores an identified image file to an external storage device, but that cannot be so because Toda teaches that his system reads an image document *from* the external storage device. *Toda*, paragraph 141. Toda never states it writes an image document to the external storage device and the Examiner has not cited to such a teaching in Toda. In fact, the external storage device of Toda could only be secondary storage as the image document is loaded from that device for compression. The system of Toda, however, does not disclose any selection of an image document from an external device and certainly does not select an

image file based on a comparison of file metadata for a file stored in the external storage device to a downgrade threshold.

The Toda reference simply does not teach a file selector or a file controller as those limitations are set forth in claim 15. Toda does not operate with these limitations because it is an image document compressor and not a file management system. The Examiner's efforts to reassemble the components of Toda into Applicant's claimed invention require creative use of Applicant's specification as a blueprint. Such hindsight use of Applicant's specification is inappropriate and the ground of rejection for claim 15 should be withdrawn. Therefore, claim 15 is patentable over all references of record, alone or in combination.

Claim 17

Claim 17 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, the Toda reference does not teach or suggest a compressor for compressing an identified image file. The Toda reference does not identify an image file for compression as required by claim 17. Instead, the Toda reference receives files without comparing file metadata for a file with a downgrade threshold. Also, the Toda reference fails to describe a compressor that compresses an image file that was stored in secondary storage. That reference also fails to teach storage of the uncompressed file to tertiary storage. Consequently, claim 17 is patentable over all the references of record, alone or in combination.

Claim 18

Claim 18 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, the color reducer of claim 18 is used in a file management system that preserves the file processed to reduce the color as well as the color reduced file. Toda in view of BABA does not disclose such a system and therefore, claim 18 is patentable over all references of record for at least this additional reason.

Claim 19

Claim 19 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, the resolution reducer of claim 19 is used in a file management system that preserves the file processed to reduce the resolution as well as the resolution reduced file. Toda in view of BABA does not disclose such a system and therefore, claim 19 is patentable over all references of record for at least this additional reason.

Claim 20

Claim 20 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, claim 20 requires that the file reducer include a pixel size reducer for reducing the number of bits in a pixel for the identified image file. Paragraphs 103 and 106 of the Toda reference cited by the Examiner refer to thin-line conversion and this operation is performed to analyze text areas. The Toda reference does not state that black pixel reduction in thin-line conversion requires a reduction in the bit size of image pixels. The burden of proof is on the Examiner and it has not been met. Additionally, the Toda reference cited by the Examiner does not teach a file reducer having a pixel size reducer in combination with a file selector and a file controller so the identified image file in which pixel size has been reduced to generate a downgraded file that is stored in secondary storage, from which the original image document was retrieved, while the original image document is stored in tertiary storage, which is slower than the secondary storage. Therefore, claim 20 is patentable over all references of record, alone or in combination.

Claim 3

The Examiner rejected claim 3 under 35 U.S.C. 103(a) as being obvious in view of the Toda and BABA combination and further in view of Gleicher et al, U.S. Patent No. 5,218,431 (hereinafter "Gleicher"). Claim 3 depends from claim 1 and is, therefore, patentable for at least the reasons set forth above with respect to that claim. Additionally,

claim 3 requires that the downgrading of the identified image file include the performing of a lossless compression on the identified image file to generate the downgraded file. The Examiner stated in the Office Action that Toda is silent with respect to lossless compression. Applicant respectfully disagrees. The Toda reference does discuss the compression of the text data with an MMR compression. *See, e.g., Toda*, page 8, ¶ 128. The MMR compression technique is recognized as a lossless compression technique for binary data. *See, e.g., U.S. Patent No. 5,204,756*, col. 8, l. 42-45. What Toda fails to teach is the application of lossless compression upon image data. The Gleicher reference does little to remedy this deficiency. Specifically, one of ordinary skill in the art would not be motivated to use the technique set forth in Gleicher to losslessly compress extracted image data in Toda. Instead, Toda discloses a system that takes advantage of the increased compression provided by the use of lossy compression techniques on image data without losing the data in the text, which is preserved through a lossless technique. If a lossless technique was used on the image data, there would be no need to separate the two types of data before compressing them. Therefore, the Examiner has failed to prove that one would combine the teachings of Gleicher with the Toda reference.

The Examiner's reference to Gleicher at col. 4, lines 52-57 does not remedy this failure as it only confirms that Gleicher teaches lossless compression of color image data for animated sequences. Furthermore, the Toda reference acknowledges an awareness of both lossless and lossy compression techniques. The Toda reference, however, reserves lossless techniques for text data and lossy techniques for image data. Therefore, the Toda reference explicitly teaches away from the lossless compression of an image file as required by claim 3. Consequently, claim 3 is patentable over all the references of record, alone or in combination.

Claim 4

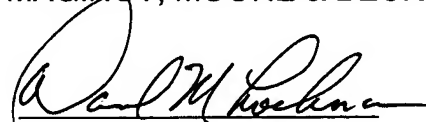
Claim 4 has been rejected under section 103(a) as being obvious over the combination of Toda and Hill in further view of Bryniarski, U.S. Patent No. 5,974,182 (hereinafter "Bryniarski"). Claim 4 depends from claim 1 and is patentable for at least the reasons

discussed above with respect to that claim. Furthermore, claim 4 requires that the downgrading of the identified image file include the performance of a lossy compression on the identified image file. The Examiner has stated that the Toda reference is silent regarding the lossy compression of an image file. Again, Applicant respectfully disagrees. As known in the art, the JPEG technique is a lossy compression technique for image data. *See, e.g.*, U.S. Patent No. 7,099,514, col. 1, l. 51-55. Therefore, the Toda reference does teach the lossy compression of image data extracted from a file containing both text and image data. Nevertheless, the Toda reference does not teach the lossy compression of an image file that is selected after file metadata for the file is compared to a downgrade threshold. The cited combination also does not teach or suggest the storage of an identified image file that has been lossy compressed in secondary storage and the storage of the identified image file in tertiary storage, the secondary storage having a faster access time than the tertiary storage. Consequently, claim 4 is also patentable over the cited references, alone or in combination.

Conclusion

For the reasons set forth above, pending claims 1, 3-10, 12-15, and 17-20 are patentable over all references of record, either alone or in combination. Reexamination and allowance of all pending claims are earnestly solicited.

Respectfully submitted,
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